

REMARKS

Reconsideration of the application in view of the foregoing amendment is respectfully requested.

By the present amendment, claim 62 is canceled, and claim 54 is amended.

Based on the foregoing amendments and the following remarks, the application is deemed to be in condition for allowance and action to that end is respectfully requested.

The Examiner rejected claims 54-103 under 35 U.S.C. § 102(b) as being anticipated by Horn, U.S. Patent No. 5,512,602 (Horn). It is respectfully submitted that claims 55, 55, 57-61, and 63-103 are patentable over Horn.

Specifically, Horn does not disclose a two-component foam system as defined in present claim 54, which comprises the defined aqueous polymer dispersion in such an amount that the water content of the polyol component (A) ranges from 20 to 60 parts by weight per 100 parts by weight of the polyols of the polyol component. Furthermore, there is no reference in Horn as to the kind and amount of the cell stabilizers as defined in claim 54.

Moreover, Horn does not disclose an aqueous polymer dispersion, containing the polymers defined in present claim 54. In this respect, the Examiner has cited column 5, lines 39 to 56 of Horn, which, while referring to “polyoxyalkylene-polyol dispersions”, does not provide any information whatsoever that said dispersion is an aqueous dispersion.

The main point, however, is that the amount of the water used according to the disclosure of the Horn as the blowing agent (d) is well below the lower limit of 20 parts by weight per 100 parts by weight of the polyol presenting the polyol component (A). Horn discloses (column 8, line 63 to column 9, line 4) an amount of water in the range of from 0.1 to 8 parts by weight based on 100 parts by weight of the polyhydroxyl compounds (b).

It is respectfully submitted that the subject-matter of claim 54 comprises the necessary novelty over Horn.

Further, Horn neither discloses the problem underlying the present invention nor the solution according to claim 54.

The problem to be solved according the present invention comprises the provision of a two-component-foam system for producing foams for construction purposes, which are specifically adapted to be used at the

construction site, for example, for the filling of openings in ceilings and walls of buildings, particularly as fire protection, and which foam system can also be applied at vertical surfaces without dripping, and which upon foaming provides a cured polyurethane foam having improved mechanical and fire protecting properties.

This problem is solved according to the present invention by a two-component foam system of claim 54, namely, by the presence of an aqueous polymer dispersion present in the polyol component (A) in such an amount that the water content of the polyol component (A) ranges from 20 to 60 parts by weight per 100 parts by weight of the at least one polyol of the polyol component (A) and a specific cell stabilizer.

The amount of water present is substantially higher than the amount necessary to provide for the full foaming of the foam system.

It has been found surprisingly by the inventors that upon the mixing of the components of the foam system a coagulation and precipitation of the polymer from the aqueous polymer dispersion is caused, obviously because of the larger amount of the water present, which coagulation has the unexpected effect that the foaming polyurethane mixture very quickly obtains a sufficient

stability by forming a gel, which has the effect that the foaming material does neither drip nor flow. This is specifically important for the use of the foam system of the present invention at the construction site, namely for fixing doors, windows and façade elements on vertical surfaces because in this case the foam system has to be applied to a vertical surface and shall not drip or sag or drop off said surface.

Furthermore, it has been found that during the coagulation and precipitation of the polymer of the aqueous polymer dispersion in the foaming system said coagulated and precipitated polymer is stretched in to the direction of the foam expansion, which leads to an anisotropic, fiber-like structure of the foam, leading to a surprisingly increased mechanical stability of the foam in this direction. This allows to control the stability of the foam product obtained in dependency from the geometry of the mold wherein the foam system is being foamed. For example, when foaming the system in an elongated mold, a foam product is obtained, which has a higher mechanical strength in the longitudinal direction of the elongated mold than in the transversal direction.

These surprising effects have been shown by the experiments summarized in "EXHIBIT A" attached to the amendment filed March 21, 2005.

As it follows from said experiments, the water content of the polyol component (A) is of decisive importance for the provision of the unexpected fiber structure responsible for the improved mechanical properties in the foamed polyurethane matrix. As can be taken from section a), with the foam system according to the present invention according to Example 3, having a water content of 39.8 parts by weight per 100 parts by weight of the polyol component Pluracol, a fiber structure is obtained as is also described in the description. In contrast thereto, when using a similar foam system, comprising only 5.6 parts by weight of water per 100 parts by weight of Pluracol, a flexible foam having large pores and a high density is obtained without the fiber structure obtained according to the present invention and which, as well, does not form a gel, necessary for the application of the foam system, specifically on vertical surfaces.

The second part of the experimental data (b) relates to the cell stabilizer used according to the present invention, in this case an alkoxylated alkylphenol. As can be seen from the table on page 3/4 of EXHIBIT "A", only the foam system according to the present invention "b_2", which comprises the cell stabilizer Emulan OP 25, comprising ethoxylated alkylphenol, provides a very short gel time of 25, whereas the two other comparative foam systems, which

either do not contain any cell stabilizer (b_1) or the cell stabilizer Dabco DC 190 based upon a silicone oil (b_3) exhibit substantially longer gel times of 60, which is detrimental to the utility of the material for its normal application on for example vertical walls. This is demonstrated by the photos shown on page 4/4, which clearly demonstrate that only the foam system according to the present invention provides for the formation of a gel and the corresponding early stability of the foaming system, which material therefore does not flow or drip from the vertical surface but clearly remains on place and expands during foaming. In contrast thereto the comparative foam system, not providing a gel formation, is seen to be flowing from the wall to which the material has been applied.

Accordingly, it is respectfully submitted that a showing of new or unexpected results attributable to the variations in amounts of water according to claim 54 has been provided.

Moreover, one skilled in the art reading the Horn reference without hindsight, will not be directed to the subject-matter claimed because it could not be expected that the use of the aqueous polymer dispersion in the two-component foam system in an amount that would provide a water content of

from 20 to 60 parts by weight per 100 parts by weight of the polyol of the polyol component – which is substantially higher than the amount of water necessary to provide for the necessary foaming of the polyurethane foam composition – in combination with the defined amount of the cell stabilizer leads to improved properties of the foam material, substantially enhancing the suitability of the foam system for its application for construction purposes.

In view of the above, it is respectfully submitted that Horn neither anticipates nor makes obvious the present invention, as defined by claim 54, and claim 54 is patentable over Horn.

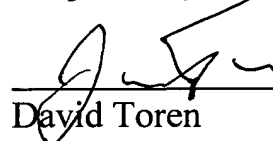
Claims 55, 57-61, and 63-103 depend on Claim 54 and are allowable for the same reason claim 54 is allowable and further because of specific features recited therein which, when taken alone and/or in combination with features of claim 54, are not disclosed or suggested in the prior art.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance, and allowance of the application is respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects, in order to place in case in condition for final allowance, it is respectfully requested that such amendment or correction be carried out by Examiner's amendment and the case passed issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, the Examiner is invited to telephone the undersigned.

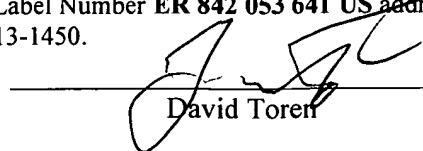
Respectfully submitted,



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